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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/982,317
Filing Date: October 18, 2001
Appellant(s): DAS ET AL.

John E. Curtin
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 4/26/2008 appealing from the Office action mailed 11/27/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6, 996, 082	Terry et al	02-2006
6, 804, 220	Odenwalder et al	10-2004
6, 535, 503	Toskala et al	03-2003
5, 577, 024	Malakmaki et al	11-1996

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-5, 8, 11-14, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terry et al (US 6, 996, 082), hereinafter referred to as Terry, in view of Odenwalder et al (US 6, 804, 220), hereinafter referred to as Odenwalder.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Terry in view of Odenwalder as applied to claim 1 above, and further in view of Toskala et al (US 6, 535, 503).

Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terry in view of Odenwalder as applied to claim 1 above, and further in view of Malkamaki et al (US 5, 577, 024), hereinafter referred to as Malkamaki.

The rejection included in the Office Action mailed on 11/27/2007 is listed below for the convenience of the Board.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 8, 11-14, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terry et al (US 6, 996, 082), hereinafter referred to as Terry, in view of Odenwalder et al (US 6, 804, 220), hereinafter referred to as Odenwalder.

Terry discloses a method and apparatus for allocating resources in hybrid TDMA communication Systems.

Regarding **claim 1**, Terry discloses a method for transmitting information in a communication channel of a wireless communication system (**Figure 1, Column 6:25-35**), the method comprising: dividing the communication channel into a plurality of time slots of equal duration; (**See Figure 4 S1...S12 are timeslots and CDMA codes 0...15 defining the sub-slots as further illustrated in Column 2:60-67**) and sub-dividing, on other than a time division basis (**Sub-slots divided on the basis of CDMA codes**), each of the plurality of time slots to comprise two or more sub-slots (**In Figure 4 each time slot contains 16 sub-slots**), and transmitting at least one transmission, among a number of transmissions, that comprises a number of contiguous sub-slots associated with at least two time slots, where the number of sub slots included in the transmission from each time slot may vary from time slot to time slot (**See Figure 15, each timeslot**

S1...S12 is sub-divided into 16 sub slots using code 0...15. It is clear from Figure 15 UE A for instance for a single transmission uses time slots 5, 6, and 7 and each time slot has different number of sub-slots. For instance UE A in time slot 5 uses 12 sub-slots and in time slot 6 uses 16 sub slots and in time slot 7 uses 3 sub slots. The transmission associated with UE C also adequately addresses this limitation)

Terry, however, fails to expressly disclose a method of transmitting a separate control channel for each separate transmission, wherein the duration of the separating control channel is dependent upon the number of transmitted sub-slots.

Odenwalder teaches a method and apparatus for generating control information for packet data and sending it on a control channel useful for various applications including CDMA (See Column 4, Lines 13-23)

Odenwalder discloses a method of transmitting a separate control channel for each separate transmission, wherein the duration of the separating control channel is dependent upon the number of transmitted sub-slots. **(See Column 5, Lines 60-67; Column 6, Lines 9-20, and 21-26)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Terry's method to incorporate a method of transmitting a separate control channel for each separate transmission, wherein the duration of the separating control channel is dependent upon the number of transmitted sub-slots. The motivation being such use of control channel technique reduces overhead and increases system resources for user data traffic since no additional new CDMA/Walsh

codes will be needed to prevent interference in the different sub-slots associated with different transmission in the control channel which is further illustrated in Odenwalder in Column 1, Lines 53-67.

Regarding **claim 14**, Terry discloses a method for transmitting information in a communication channel of a wireless communication system (**Figure 1, Column 6:25-35**), the method comprising: dividing the communication channel into a plurality of time slots of equal duration according to a time division multiple access scheme (**See Figure 4 S1...S12 are timeslots (TDMA system) and CDMA codes 0...15 defining the sub-slots as further illustrated in Column 2:60-67**) and sub-dividing each of the plurality of time slots to comprise two or more sub-slots according to CDMA scheme (**See Column 3:1-5**); transmitting at least one transmission, among a number of transmissions, that comprises a number of contiguous sub-slots associated with at least two time slots, where the number of sub slots included in the transmission from each time slot may vary from time slot to time slot. (**See Figure 15, each timeslot S1...S12 is sub-divided into 16 sub slots using code 0...15. It is clear from Figure 15 UE A for instance for a single transmission uses time slots 5, 6, and 7 and each time slot has different number of sub-slots. For instance UE A in time slot 5 uses 12 sub-slots and in time slot 6 uses 16 sub slots and in time slot 7 uses 3 sub slots. The transmission associated with UE C also adequately addresses this limitation**)

Terry, however, fails to expressly disclose a method of transmitting a separate control channel for each separate transmission, wherein the duration of the separating control channel is dependent upon the number of transmitted sub-slots.

Odenwalder discloses a method of transmitting a separate control channel for each separate transmission, wherein the duration of the separating control channel is dependent upon the number of transmitted sub-slots. **(See Column 5, Lines 60-67; Column 6, Lines 9-20 and 21-26)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Terry's method to incorporate a method of transmitting a separate control channel for each separate transmission, wherein the duration of the separating control channel is dependent upon the number of transmitted sub-slots. The motivation being such use of control channel technique reduces overhead and increases system resources for user data traffic since no additional new CDMA/Walsh codes will be needed to prevent interference in the different sub-slots associated with different transmission in the control channel which is further illustrated in Odenwalder in Column 1, Lines 53-67.

Regarding **claims 2**, Terry discloses a method, wherein each of the two or more contiguous sub-slots is separately transmitted according to a code division multiple access schemes. **(See Columns 2:64-67 and 3:1-10)**

Regarding **claim 3**, Terry discloses a method wherein, in any one of the plurality of time slots, each of a plurality of transmissions are separately coded and carried in a separate sub-slot simultaneously in such time slot. **(See Columns 2:64-67 and 3:1-10)**

Regarding **claim 4**, Terry discloses a method wherein each of the plurality of transmissions corresponds to a separate user of the wireless communication system.

(See Figures 4-10, UE A, UE B, UE C are separate users. See Columns 2:64-67 and 3:1-10)

Regarding **claim 5**, Terry discloses a method wherein each off the plurality of transmissions corresponds to separate transmissions of a single user of the wireless communication system. **(See Figures 4-10, UE A, UE B, UE C are separate users with multiple sub-slots transmission. See Columns 2:64-67 and 3:1-10)**

Regarding **claim 8**, Terry discloses a method, wherein the communication channel comprises time slots each having duration of 1.25 milliseconds and wherein each of the time slots comprises at least two sub-slots. **(Terry discloses in Figure 5B and further on Column 6, Lines 39-43 that each time slot can have several sub-channels. There is no restriction imposed on the duration of the time slot and can readily be 1.25 milliseconds and 1.25 millisecond duration is standard for TDMA systems.)**

Regarding **claim 11**, Terry discloses all aspect of the claimed invention as set forth in the rejection of claim 1 but fails to disclose a method wherein the communication channel is a forward packet data channel (F-PDCH), wherein information is transmitted as encoder packets in the forward packet data channel (F-PDCH), and wherein the separate control channel is a forward secondary packet data control channel (SPDCCH).

Odenwalder discloses a method wherein the communication channel is a forward packet data channel (F-PDCH), wherein information is transmitted as encoder packets in the forward packet data channel (F-PDCH), and wherein the separate control channel

is a forward secondary packet data control channel (SPDCCH). **(See Column 5, Lines 60-67; Column 6, Lines 9-20, and 21-35)**

Regarding **claim 12**, Terry teaches all aspect of the claimed invention as set forth in the rejection of claim 1 but fails to disclose a method, wherein the forward secondary packet data control channel (SPDCCH) includes:

a sub-slot start field for identifying a sub-slot within a time slot in which a particular transmission starts; and

a sub-slot count field for identifying the total number of sub-slots that carry the particular transmission.

Odenwalder discloses a method, wherein the forward secondary packet data control channel (SPDCCH) includes:

a sub-slot start field for identifying a sub-slot within a time slot in which a particular transmission starts; and

a sub-slot count field for identifying the total number of sub-slots that carry the particular transmission. **(Odenwalder's system has to have a sub-slot count and start fields because it has to convey to the end user the number of sub-slots assigned to the user and where the number of sub-slots are and this particular inherency is chronicled in Column 5, Lines 60-67; Column 6, Lines 9-20, and 21-35.)**

Regarding **claim 13**, Terry teaches all aspect of the claimed invention as set forth in the rejection of claim 1 but fails to disclose a method, wherein a plurality of forward secondary packet data control channels (SPDCCH) correspond to a plurality of

simultaneous transmissions on the forward packet data channel (F-PDCH), and wherein each of the plurality of secondary packet data control channels (SPDCCH) identifies a sub-slot start position within a time slot in which a particular transmission starts.

Odenwalder discloses a method, wherein a plurality of forward secondary packet data control channels (SPDCCH) correspond to a plurality of simultaneous transmissions on the forward packet data channel (F-PDCH), and wherein each of the plurality of secondary packet data control channels (SPDCCH) identifies a sub-slot start position within a time slot in which a particular transmission starts. **(Odenwalder's system has to have a sub-slot count and start fields because it has to convey to the end user the number of sub-slots assigned to the user and the nature of this inherency is chronicled in Column 5, Lines 60-67; Column 6, Lines 9-20, and 21-35.)**

With respect to **claims 11-13**, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Terry's method by including a forward packet data channel (F-PDCH), a forward secondary packet data control channel (SPDCCH), wherein the forward secondary packet data control channel (SPDCCH) includes a sub-slot count and start fields. The motivation being such use of control channel technique reduces overhead and increases system resources for user data traffic since no additional new CDMA/Walsh codes will be needed to prevent interference in the different sub-slots associated with different transmission in the control channel which is further illustrated in Odenwalder in Column 1, Lines 53-67.

Regarding **claim 17**, Terry discloses a method, wherein bandwidth in the communication channel is allocated on a fractional basis to carry a plurality of transmissions using a combination of a variable number of contiguous sub-slots and a variable number of contiguous time slots. **(See Figures 4-8 and 13, See Columns 2:64-67 and 3:1-10)**

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Terry in view of Odenwalder as applied to claim 1 above, and further in view of Toskala et al (US 6, 535, 503).

The combination of Terry and Odenwalder, teach all aspect of the claimed invention as set forth in the rejection of claim 1 but fails to disclose a method, wherein each of the two or more sub-slots within a particular time slot corresponds to a different frequency according to a frequency division multiple access (FDMA) scheme.

Toskala like Terry discloses a method and apparatus for allocating resources in hybrid TDMA communication Systems. The hybrid TDMA system primarily described by both Toskala and Terry is TDMA/CDMA.

Toskala shows that TDMA/FDMA is feasible and further discloses a method, wherein each of the two or more sub-slots within a particular time slot corresponds to a different frequency according to a frequency division multiple access (FDMA) schemes. **(See Column 1, Lines 40-50)**

It would have been obvious to one of ordinary skill in the art at the time of invention to practice FDMA/TDMA access in the combination of Terry's and Odenwalder's method wherein each of the two or more sub-slots within a particular time slot corresponds to a different frequency according to a frequency division multiple access (FDMA) schemes. One is motivated to use TDMA/FDMA in GSM systems as it is widely used in the international wireless market and GSM access method is based on both FDMA and TDMA.

Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terry in view of Odenwalder as applied to claim 1 above, and further in view of Malkamaki et al (US 5, 577, 024), hereinafter referred to as Malkamaki.

Regarding **claim 18**, the combination of Koorapaty and Odenwalder, teach all aspect of the claimed invention as set forth in the rejection of claim 1 but fails to disclose a method wherein transmissions within the communication channel include two or more transmissions selected from the group consisting of new transmissions, retransmissions, acknowledgements (ACKs), negative acknowledgements (NACKs), and multi-level ACK/NACK messages.

Malkamaki discloses a TDMA/CDMA system similar to Koorapaty but further incorporates Automatic Repeat request (ARQ) transmission scheme.

Malkamaki discloses a method wherein transmissions within the communication channel include two or more transmissions selected from the group consisting of new transmissions, retransmissions, acknowledgements (ACKs), negative acknowledgements (NACKs), and multi-level ACK/NACK messages. **(See Column 1, Lines 19-35; Column 3, Lines 65-67; and Column 4, Lines 1-17; Since Malkamaki's system supports ARQ and also like Koorapaty's system allows sub-slots in a given time slot, it is possible to have 4 users sharing the time slot. Each user in the sub-slot can be sending new transmission, Acks, Nacks and multi-level ACK/NACK).**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Terry's and Odenwalder 's method to incorporate orthogonal ARQ transmission, the motivation being implementing an error correction system for users in a TDMA/CDMA system.

Regarding **claim 19**, the combination of Terry and Odenwalder, teach all aspect of the claimed invention as set forth in the rejection of claim 1 but fails to disclose a method, wherein a multi-level ACK/NACK message corresponds to multiple transmissions that end within the same time slot.

Malkamaki discloses disclose a method, wherein a multi-level ACK/NACK message corresponds to multiple transmissions that end within the same time slot. **(See Column 1, Lines 19-35; Column 3, Lines 65-67; and Column 4, Lines 1-17; Malkamaki's system supports ARQ in an environment where multiple transmission within the same environment is allowed.)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Terry's and Odenwalder's method to incorporate orthogonal ARQ transmission, the motivation being implementing an error correction system for users in a TDMA/CDMA system.

(10) Response to Argument

Appellants' Arguments with respect to claim 1: Appellants argue, in the Appeal Brief in pages 4 and 5 that the prior arts cited by the Examiner, i.e. Terry and Odenwalder, taken separately or in combination fail to disclose a specific limitation of claim 1 requiring a separate control channel for each transmission. Appellants further argue in the last paragraph of page 4 that their invention provides a method of transmitting a separate control channel for each transmission within a data channel.

Appellants' further challenge Examiner's broad interpretation of the limitation in question in view of the disclosure of the specification presented in the Advisory Action

mailed on 3/17/2008 in the 3rd paragraph of page 5 of the Appeal Brief. Examiner emphasized in the Advisory Action mailed on 3/17/2008 that the specific limitation in question in claim 1 does not necessarily require the control channel used for the first transmission be different from the control channel used for the next transmission. Examiner explained in the same Advisory Action that the limitation only requires the use of a control channel entity that is separate from each transmission carried on the data channel. However, Appellants take the position that the Examiner's interpretation of the claimed limitation is neither reasonable nor consistent with the specification.

Examiner's Response: Examiner after carefully considering Appellant's arguments and positions still respectfully disagrees with Appellant's conclusions.

Examiner strongly believes that the claim limitation interpretation provided by the Examiner is proper as it is based on procedures laid out in the MPEP. (See MPEP § § 2111-2116.01 for guidelines on claim interpretation)

The MPEP in section § § 2111-2116.01 requires three key determinations to be made for establishing proper claim interpretation. Namely,

a) in section 2111, it requires claims must be given their broadest reasonable interpretation.

b) in section 2111.01, it also requires that the words of a claim must be given their "plain meaning" unless such a meaning is inconsistent with the specification and it is improper to import claim limitations from the specification,

c) in section 2111.01, it also requires that "plain meaning" refers to the ordinary and customary meaning given to the term by those of ordinary skill in the art.

Accordingly, one can easily interpret "separate control channel for each transmission" to mean simply that a control channel separate from the data channel is used for each transmission. Based on MPEP's guidelines this interpretation is the broadest reasonable interpretation.

The Examiner has given each word in the limitation in question a plain meaning consistent with the specification. For instance, Appellants' drawing Figure 1 shows a separate control channel SPDCCH and a data channel F-PDCH which is also clearly described in such a manner in the specification on page 3, Lines 14-22. Further more Appellants agree that Odenwalder discloses a separate control channel and a separate data channel as evidenced by the statement in the 3rd paragraph of the Appeal Brief. Hence Examiner's broadest reasonable interpretation is also consistent with the specification.

The Examiner's broadest reasonable interpretation is also in agreement with the ordinary and customary meaning given to the terms "separate control channel for each transmission" by those of ordinary skill in the art. Once again the Appellants indicate in the specification on page 3, Lines 14-22 and in the Appeal Brief in the 3rd paragraph of page 4 by unequivocally stating that separating a control channel from data channel is well known in the art lend support to Examiner's position that broadest claim interpretation provided is consistent to the ordinary and customary meaning given to the limitation by those of ordinary skill in the art.

It is also the position of the Examiner that Appellants attempt, as evidenced in the Appeal Brief in the 3rd paragraph of page 5, to expand the meaning of the limitation

in question by citing the disclosure stating "...including a separate signal blocks 251-254 for each corresponding transmission 227-230..." in the specification on page 6, lines 21-24 is inappropriate according to the MPEP's Section 2111.01 as it is improper to import claim limitations from the specification. Claim 1 does not explicitly require the control channel not to be shared by the transmissions using the data communication channel. Claim 1 only requires the use of a control channel separate from the claimed data communication channel and the duration of the separate control channel is dependent upon the number of transmitted sub-slots. Claim 1 only claims a single separate control channel.

Finally, Odenwalder, as Appellants readily agrees, teaches that the control channel (i.e. referred to as forward secondary packet data control channel), is a separate channel from the other control channel (i.e. forward primary packet data control channel) and the data channel (i.e. forward packet data channel) as illustrated in Column 5, Lines 60-67. Odenwalder also suggests in the same section there can be more than one control channels associated with the data channel. Further, Odenwalder teaches the entire limitation in question, i.e. "transmitting a separate control channel for each transmission, wherein the duration of the separate control channel is dependent upon the number of transmitted sub-slots" in Column 6, Lines 9-26 as Odenwalder clearly indicates in this section that the length of the secondary packet data control channel is dependent on the number of time slots occupied by the corresponding data sub-packets on the forward packet data channel.

For the above reasons, it is believed that the rejections should be sustained.

Art Unit: 2616

Respectfully submitted,

/Habte Mered/

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